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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/785,890

02/16/2001

Robert M. Moore JR.

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EXAMINER

PRYOR, ALTON NATHANIEL

ART UNIT

PAPER NUMBER

1616

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 09/785,890	<b>Applicant(s)</b> MOORE ET AL.	
	<b>Examiner</b> ALTON N. PRYOR	<b>Art Unit</b> 1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/6/08</u> .  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Applicant's arguments with respect to claims 11-30 have been considered but are moot in view of the new ground(s) of rejection. Previous rejections not discussed in this office action have been withdrawn.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 11-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Goodenough (USPN 3558503; 1/26/71 – Exhibit 1003).

Having analyzed instant claims, we turn to the evidence. Goodenough discloses aqueous bromine solutions with bromine values of about 0.01 to about 100,000 ppmw useful for bleaching processes, treatment of swimming pool water, and disinfection. See column 1, lines 13-61. Specifically, Goodenough teaches solutions made by a process comprising providing an aqueous solution of bromine and contacting therewith a bromine value stabilizer (e.g., sulfamic acid) and an effective amount of magnesium hydroxide sufficient to achieve a final pH in the system ranging from about 8 to about 10. See column 2, lines 1-40. In addition, Goodenough teaches that the bromide solutions to be treated by the disclosed process may further contain chlorides in the form of brine solutions such as sodium chloride or calcium chloride. See column 2, lines 16-22. Goodenough discloses that the molar ratio of bromine to nitrogen is from about 2

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to about 0.5, which would have indicated to one of ordinary skill in the art that the atomic ratio of nitrogen to active bromine (N:Br) is from about 0.5 to about 2. See column 1 lines 66-69. Goodenough teaches a Solution A "prepared by admixing 6.05 grams of sulfamic acid with about 500 grams of water, followed by addition of about 3.65 grams of magnesium hydroxide and about 5 grams of bromine." See example 3, column 4 lines 66-69. Goodenough states the solution was placed in a brown ultraviolet light-screening bottle for about 4 days, thus indicating to one of ordinary skill in the art (based on the exothermic nature of the reaction disclosed in the Goodenough) that cooling occurred. Hence, Goodenough's reaction is exothermic.

Instant invention alleges that the use of bromine chloride in lieu of bromine results in a nonobvious difference. This contention lacks merit for a number of reasons. First, instant independent claims recite pH of 13 or greater. Second, nowhere does the instant specification point to any experimental evidence establishing any difference, let alone a patentable difference, between a biocide within the scope of instant claim 11 and Goodenough's final bromine compound where sodium chloride or calcium chloride is used as a starting material along with bromine. Note it is inherent that the combination of bromine with sodium chloride or calcium chloride in the Goodenough patent would result in the BrCl compound employed in instant invention.

Assuming that some difference results by practicing the process recited in instant product claims, instant specification has not shown that this difference in the preparation process results in a product of claim 11 and 21 being different from Goodenough's product. One having ordinary skill in the art would have been led to exchange

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Goodenough's bromine with bromine chloride with the expectation that these reactants would be interchangeable as bromine sources in the production of bromine-based biocides and that bromide chloride would provide advantages over bromine.

With respect to instant claims 11 and 21, which state that the solution's pH is about 13 or greater. Note that the pH of the aqueous alkali sulfamate solution in Goodenough's Example 3 would be about 13.9. (Exhibit 1001). Goodenough's pH of around 13.9 makes obvious the instantly claimed pH of about 13 or greater. It would have been obvious to one having ordinary skill in the art at the time of the filing of instant to provide an initial solution as set forth in instantly claimed subject matter having a pH between 13 and 14, which encompasses the claimed range, in order to maintain the storage stability of the final product.

The subject matter of the instant claims 12,13,15,17,18,20-23,25,27,28,30 reciting an active bromine content of "at least about 100,00 ppm and an atomic ratio of nitrogen to active bromine of greater than 0.93 would have been obvious to a person having ordinary skill in the art because the prior art ranges and instantly claimed ranges overlap.

Now regarding claim 10, one having ordinary skill in the art would have found the method of instant claim 10 obvious because Goodenough teaches the use of the composition in water treatment. See column 1 lines 13-61.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodenough (USPN 3558503; 1/26/71 – Exhibit 1003) in view of Declaration of B. Gary McKinnie (Exhibit 1001), The Second Declaration of B. Gary McKinnie, 2/14/05 (Exhibit 1073) Mills et al., Bromine Chloride: an Alternative to Bromine, Ind. Eng. Chem. Prod. Res. Develop., vol. 12, No. 3, 1973, pp.161160-165 (Exhibit 2014), Declaration of Dr. Jack Mills, 12/6/04 (Exhibit 2021), Expert Declaration of Dr. Shunong Yang, 12/6/04 (Exhibit 2022), and Expert Declaration of John A. Wojtowicz, 12/7/04 (Exhibit 2023).

Having construed instant claims, we turn to the evidence. Goodenough discloses aqueous bromine solutions with bromine values of about 0.01 to about 100,000 ppmw useful for bleaching processes, treatment of swimming pool water, and disinfection. See column 1, lines 13-61. Specifically, Goodenough teaches solutions made by a process comprising providing an aqueous solution of bromine and contacting therewith a bromine value stabilizer (e.g., sulfamic acid) and an effective amount of magnesium hydroxide sufficient to achieve a final pH in the system ranging from about 8 to about 10. See column 2, lines 1-40. In addition, Goodenough teaches that the bromide solutions to be treated by the disclosed process may further contain chlorides in the form of brine solutions such as sodium chloride or calcium chloride. See column 2, lines 16-22. According to Dr. McKinnie, the reaction the reaction in the Goodenough would be exothermic. See exhibit 1001. Goodenough discloses that the molar ratio of bromine to nitrogen is from about 2 to about 0.5, which would have indicated to one of ordinary

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skill in the art that the atomic ratio of nitrogen to active bromine (N:Br) is from about 0.5 to about 2. See column 1 lines 66-69. Goodenough teaches a Solution A “prepared by admixing 6.05 grams of sulfamic acid with about 500 grams of water, followed by addition of about 3.65 grams of magnesium hydroxide and about 5 grams of bromine.” See example 3, column 4 lines 66-69. Goodenough states the solution was placed in a brown ultraviolet light-screening bottle for about 4 days, thus indicating to one of ordinary skill in the art (based on the exothermic nature of the reaction disclosed in the Goodenough) that cooling occurred.

Given the close similarities between the preparation processes and starting materials stated in instant claims 11-30 and the prior art, it is reasonable to conclude that the claimed “composition” and the stable prior art final bromine compound as described in Goodenough are essentially the same.

The evidence of record supports a prima facie case of unpatentability against instant claims 11-30.

Moore alleges that the use of bromine chloride in lieu of bromine results in a nonobvious difference. In support of this contention, Moore relies on the Second Declaration of B. Gary McKinnie.

This contention lacks merit for a number of reasons. First, instant independent claims 11 and 21 recites that the pH value is 13 or greater. Second, nowhere does the instant specification point to any experimental evidence establishing any difference, let alone a patentable difference, between a biocide within the scope of instant claims 11

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and 21 and Goodenough's final bromine compound where sodium chloride or calcium chloride is used as a starting material along with bromine.

Assuming that some difference results by practicing the process recited in instant product claims, instant specification has not shown that this difference in the preparation process results in a product of claims 11 and 21 different from Goodenough's product. According to Jack F. Mills & John A. Schneider, "Bromine Chloride: an Alternative to Bromine," 12 Ind. Eng. Chem. Prod. Res. Develop. 160-165, no. 3 (1973) (Exhibit 2014, "Mills paper"), bromine chloride and bromine are interchangeable brominating agents and the former offers, inter alia, important cost and ecological advantages. (Mills paper at 160. One having ordinary skill in the art would have been led to exchange Goodenough's bromine with bromine chloride with the expectation that these reactants would be interchangeable as bromine sources in the production of bromine-based biocides and that bromide chloride would provide advantages over bromine. This conclusion is in agreement with: (1) Dr. Mills's declaration, which based on the teaching of the Mills paper, pronounces that the interchange of bromine chloride for bromine in instant invention (claims) would have been obvious (Exhibit 2021) as well as (2) Dr. Yang's testimony, stating that "substitution of bromine chloride for bromine is obvious (Exhibit 2022).

With respect to instant claims 11 and 21, which states that the solution's pH is about 13.0 greater. Dr. McKinnie, has calculated that the pH of the aqueous alkali sulfamate solution in Goodenough's Example 3 would be about 13.9. (Exhibit 1001). Goodenough's pH of around 13.9 makes obvious the instantly claimed pH of about 13



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or greater in instant claims 11 and 21. Moreover, Drs. Yang and Wojtowicz both favor that it would have been obvious to one having ordinary skill in the art at the time of the filing of instant to provide an initial solution as set forth in instantly claimed subject matter having a pH between 13 and 14, which encompasses the claimed range, in order to maintain the storage stability of the final product. Exhibits 2022 and 2023.

The subject matter of the instant claims reciting an active bromine content of "at least about 100,00 ppm and an atomic ratio of nitrogen to active bromine of greater than 0.93 would have been obvious to a person having ordinary skill in the art because the prior art ranges and instantly claimed ranges overlap.

### ***Response to Applicants' argument***

Applicants argue 1) "newly added claims 21-30 each recite a minimum pH of "at least about 13.0" for an alkali metal sulfamate solution during addition of bromine chloride"; 2) "newly added claims 21-30 is an aqueous biocidal solution rather than a stabilized bromine-based biocidal compound". The applicant seeks a scope which is not merely limited to stabilized halogen compound, or limited to the aqueous biocidal solution produced by the process of these claims; 3) Dr. McKinnie' declaration discusses the composition of an aqueous biocidal solution produced by the methods recited in claims 21-30. Dr. McKinnie in his declaration determined that addition of bromine chloride to an alkali metal sulfamate solution which is maintained at a pH of at least 13.0 during the addition of BrCl results in an aqueous biocidal composition comprising an about 4:1 molar ratio of stabilized bromine (N-bromosulfamate) to stabilized chlorine (N-chlorosulfamate); 4) The aqueous biocidal compositions of new

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claims 21-30 comprise N-chlorosulfamate and thus differs from the composition comprising N-bromosulfamate produced by Goodenough. Examiner argues that Goodenough in Example 8 states that the pH of the solution is from about 13 to about 13.7 and note that the pH of the aqueous alkali sulfamate solution in Goodenough's Example 3 would be about 13.9. This pH disclosed in Goodenough makes obvious the instant pH of about 13 or greater in instant claims 11 and 21. Goodenough teaches the combination of base with sulfamic acid and a bromine source in water which reads on instant claims to aqueous biocidal composition. Note that BrCl is the bromine source in instant invention and the Applicants have not shown unexpected results for BrCl in comparison to bromine. The instant claims do not recite that the instant composition comprises N-chlorosulfamate. BrCl serves as a bromine source to produce bromosulfamate not chlorosulfamate.

### ***Telephonic Inquiry***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alton N. Pryor whose telephone number is 571-272-0621. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alton N. Pryor/  
Primary Examiner, Art Unit 1616